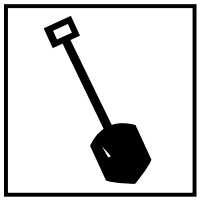
Best MANAGEMENT PRACTICES



Construction Site Management in Landscapes

1.1 Definition of Resource

The purpose of this section is to identify best management practices, policies, and procedures that are to be used by Seattle Parks and Recreation (SPR) staff when working on landscape construction and renovation projects in order to protect public safety, park assets, and the environment. This BMP sets the standards for decision making, communication, planning, monitoring, and performing work on landscape construction and renovation projects.

1.2 Goal Statement

Construction sites will be managed to guarantee a successful project during all phases: 1) during construction 2) at project completion, and 3) for a lifetime of maintenance and public use.

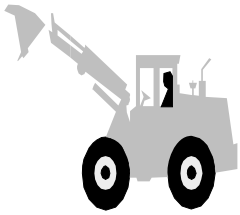
Our goals in managing construction sites on SPR properties are to:

- Ensure public and worker safety
- Minimize damage to park assets (natural or manmade)
- Ensure that SPR staff can identify practices not in compliance with this BMP and know whom to report them to and when
- Enable SPR staff to make cost effective decisions that protect park assets and the environment while getting quality work done
- Protect water quality of downstream waterways
- Avoid pollution of soil and water, reduce soil compaction, and to
- Avoid making changes to the natural drainage of a site
- To reduce the transport of soil or dust from disturbed soil surfaces onto roadways, drainage ways, and surface waters.

1.3 Definitions

Capital Improvement Project (CIP): A Capital Improvement Project (CIP) is a major park renovation or construction project that has been approved by the City Council and has its own dedicated funds in the City budget. Most often, CIP projects are bid on and the work carried out by contractors. A SPR Project Manager always manages the work. At times, SPR landscape staff may carry out all or parts of the work on CIPs but overall management of the project is still the responsibility of the Project Manager.

Construction Activity: Clearing, grading, excavation, and any other activity that disturbs the surface of the land. Such activities may include road building, constructing buildings, demolition of structures, or creation of new landscaped areas.



Construction Site: Any site where construction activity is being performed. A construction site may extend to any area where existing vegetation can be damaged due to landscape construction, renovation, or demolition activities.

Contractor: A person or company who is paid to work on SPR properties but is not a City of Seattle employee. Contractors can work on any type of project.

"Dial-Before-You-Dig": A statewide system to allow location of underground utilities before construction. This contact is mandatory before beginning any project. The phone number is **1-800-424-5555**.

District Senior Gardener: The senior/supervising Gardener assigned to each SPR Park Resource District.

Maintenance Staff: SPR staff assigned to a Park Resource District.

Neighborhood Matching Fund (NMF): A fund of money given to citizen groups to improve their community. Often, these funds are used to improve parks and hire contractors to work in parks. All NMF projects in SPR require a Project Manager.

Project: A defined scope of work in a park other than routine maintenance. All projects have a scheduled start date and proposed completion date and are managed by a Project Manager or Project Lead

Project Lead: This person serves as the project manager for projects that are not CIP or NMF funded. The Project Lead is typically the person who requests work to be done or is the onsite person supervising the work and/or the staff at any given time. Usually the project lead is a SPR staff person or other city employee, but the project lead may at limited times it may be a consultant, contractor, member of another organization, or a volunteer

Project Manager: The person assigned by SPR Planning and Development Division responsible for overall management of a CIP or NMF project. Project management duties include schedule, budget, and related logistics.

Senior Urban Forester: the person who heads the Urban Forestry Unit. The SUF is first point of contact on construction issues related to trees.

SPR In-House Locate: The Maintenance Services Division of SPR that performs the location of irrigation, plumbing, or electrical lines within a park.

SPR In-House Project: Non-routine maintenance work carried out by SPR staff. SPR In-House Project sometimes refers to the work of SPR staff working on CIP or NMF projects.

Tree Protection Plan: A written report that evaluates the anticipated impacts of the proposed construction on the viability of trees within and adjacent to the project site. The plan details the measures that are to be performed to ensure the protection of any trees that are kept and new trees that are added. Typically, an inventory indicates trees or other vegetation that are significant, landmark, healthy, unhealthy, to be removed, and to be replaced. A site map is also prepared made showing the location of significant vegetation and trees with their associated drip lines.

Vegetation Protection Areas (VPA): An area or areas within or adjacent to a construction site that contains significant or valuable vegetation in need of protection. A detailed plan should be developed to protect VPAs from the potential impacts of construction.

1.4 Policies and Guidelines

Planning, designing, and work performed on construction sites will be monitored, and carried out within the scope of:

- **Environmental Policy, Policy and Procedure 8.13:** SPR environmental stewardship policies
- "Guidelines for Landscape Work affecting Utilities". This guideline explains the step-by-step procedures for organizing a construction project or maintenance regime to avoid potential damage to utilities.
- **Landmark Historic Structures lists and guidelines**: Many park sites facilities are designated historic landmarks. These structures and sites are regulated for design changes, renovation, maintenance and other activities that may impact the integrity of the structure. **http://inweb/parks/referencedocs/**
- **Landmark Preservation**: Specific information about procedures related to historic structures. www.cityofseattle.net/neighborhoods/preservation
- **Safety Standards for Construction Work (Chapter 296-155 WAC, Department of Labor and Industries)**: All required safety procedures and equipment to ensure the safety of people working on the project and park users.
- **SPR Standards and Specifications**: All mandated SPR construction standards that apply to landscape projects. http://www.cityofseattle.net/parks/projects/standards/specs.asp)
- **SMC Title 22.800, Stormwater, Grading, & Drainage Control Code, Volume 2 "Construction Stormwater Control Technical Requirements Manual":** All mandated procedures that protect aquatic systems and wildlife.
- **Seattle Department of Parks and Recreation Tree Management, Maintenance, Pruning And/Or Removal Policy,** Number 060-P 5.6.1, June 1, 2001
  http://parksweb/refs/policy/index.htm
- Accepted national "best practices" regarding tree protection and care during construction (Avoiding Tree Damage During Construction, International Society of Arboriculture, http://www.treesaregood.com/treecare/avoiding_construction.asp; Avoiding Tree & Utility Conflicts, International Society of Arboriculture,

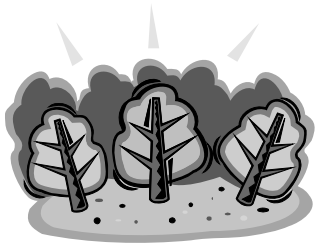
http://www.treesaregood.com/treecare/avoiding_conflicts.asp; Treatment of Trees Damaged By Construction, International Society of Arboriculture, http://www.treesaregood.com/treecare/treatment_construction.asp)

- **Vegetation Management Plan (VMP):** A plan for the long-term restoration, renovation and care of the vegetation within the boundaries of a particular park.

1.5 All Landscape Construction and Renovation Projects

SPR staff should know who the responsible person is that is managing any landscape projects within their parks. For a CIP or NMF project, the Project Manager may be found on the Project Management home page in the Parks InWeb (http://inweb/parks/project_management/). SPR staff should be familiar with the construction and landscape regulations concerning ongoing projects in their parks. All efforts will be made to protect park assets, the public, and worker safety. If work is not being performed according to this BMP (or other applicable policy), report concerns and recommendations to your supervisor.

1.5.1 Pre-construction Planning



- Contact SPR Scheduling office at 684-4080, to see if any events are scheduled at the proposed work site on or around the time construction or renovation is scheduled. If the proposed work will conflict or inconvenience a paid user of a park facility, the project should be moved to a time when no conflict or inconveniencies exists, if possible. Closure notices need to be given to Events Scheduling staff at least 8-12 months in advance.

- The Senior Urban Forester is responsible for decisions related to trees onsite before and during removal. All relevant notes and materials gathered in the public input/involvement process should be used when making decisions regarding tree management issues.

- The District Senior Gardener, working with a SPR Landscape Architect, will be responsible for changes to, and protection of, onsite vegetation. (see **'Guidelines for Landscape work affecting Utilities',** Appendices List, page 1-13).

- The Project Lead will:

  1. Make sure all necessary permits are in place prior to construction. These may include construction permits, clearing and grading, traffic permits, and site use permits.

  2. Depending on scope and duration of a project you may be to notify the surrounding community and any special use park users if work will change the typical use pattern of the park or restrict use in a substantial way. Signage should be posted and notices sent out at least two weeks prior to start date of work. Signage should contain the Parks logo,

describe the project's length of time, and whom to contact with questions.

3. Create a site inventory of plants and structures, if called for. This includes determining size, species, and numbers of major trees/plants onsite and locating irrigation and drainage systems. Prepare a map detailing these site features. This will determine what kinds of protections will be needed, if damage has occurred, and will help determine replacement costs if needed. Depending on scope of project, a visual inventory of the site is appropriate. It may be helpful to photograph the area prior to construction.

4. District Senior Gardener will identify potential harm to vegetation and other park assets and identify mitigating practices that may be needed. District Senior Gardener will consult with Senior Urban Forester to discuss protection strategies.

5. If one or more trees of significant size or value is/are located in the proposed construction site, create a Tree Protection Plan in consultation with the Senior Urban Forester. A Tree Protection Plan details what precautions will be needed to avoid damage to trees. Precautions may include fencing around tree trunks, flagging off of specific VPAs, and avoiding driving in the areas under trees to protect root systems from damage.

6. Place a Work Order for SPR In-House Locate at least two weeks prior to start of project to find and locate infrastructure (electrical, irrigation, drainage) on the project site.

7. Check to see that irrigation and drainage systems within and adjacent to the work site are operable and will be protected from damage. Functioning irrigation is vital to plant health before, during, and after construction.

8. Contact "Dial-Before-You-Dig" at least two days prior to beginning of project to locate underground utilities to ensure they are not damaged during construction.

    a. Only the following colors should be used to denote specific utilities and specifications. These are considered universal standards for construction activities:

Color	Utility
Red	Electrical, Cable Conduit
Yellow	Gas/Oil
Blue	Water, Irrigation
Green	Sewer
Orange	Cable/Communication
Pink	Temporary Survey Markings
White	General Construction, Proposed Excavation

- Confirm that utilities have been located through a visual inspection of site, Dial-A-Dig, or by SPR In-House Locate before any work begins.
- Inform your supervisor of any work that may negate or change a product or previous works' warranty.

1.5.2 Construction Site Preparation

- Construction fences shall be installed as required for vegetation protection and public safety.
- Staging areas for equipment shall be established far enough from plant material so that plants and their roots are protected.
- Entry and exit routes shall be established and fenced off with chain link or construction fencing if necessary. When planning routes, avoid utility access corridors.

- Chain-link fencing or a similar barrier shall be installed around all vegetation within a vegetation protection area (VPA). For trees, fencing or similar barriers shall be installed to create a protective buffer zone. The

buffer zone should be no closer than the drip line of the existing trees and preferably farther.

- The following areas shall be mulched with 12 to 18 inches of chips, hog fuel, or other acceptable material if the Senior Urban Forester, Crew Chief, District Senior Gardener, Plumber; Project Manager or Project Lead recommends this type of protection. The material must be removed from these areas when construction is complete.

1. Vegetation protection areas
2. Entry or exit routes
3. Staging areas
4. Areas near existing irrigation systems
5. High equipment use areas.

- Protect onsite irrigation and drainage systems. All drains are to be protected with appropriate method as determined by project lead or other senior staff member at SPR.

1.5.3 Stormwater Management

Whenever work is undertaken, consideration should be given to reducing stormwater runoff and reducing soil particles/contaminants from leaving a construction site in order to protect water quality and aquatic habitat. Examples of work where stormwater management is critical are capital projects, irrigation, clearing and grading, ditch excavation, sod projects, and planting. Depending on the activity, some or all of the following best management practices may apply:

- Prepare site map and or determine/mark areas, showing the clearing limits, staging areas, sensitive areas, construction entrance, and stormwater flow.
- Silt fencing shall be installed around the perimeter of a site when necessary to contain and prevent soil movement offsite. This mostly occurs in the form of sediment (soil mixed with water).
- Divert runoff from adjacent areas (clean water) from entering the construction site.
- Establish a construction vehicle access. It is preferred to have only one entrance or if the project is linear to have two entrances. The construction entrance is to be built of quarry squalls or by using wood chips or hog fuel.
- Any sediment tracked onto adjacent roads is to be removed by sweeping or shoveling. Washing of the streets is not allowed.

- Retain the duff layer, native topsoil, and natural vegetation is an undisturbed state to the maximum extent practicable. Minimize areas where soil will be exposed or disturbed.

- Timing – Attempt to schedule work on dry days if possible, especially for sites that have steep slopes or high potential for soil erosion. Work on steep slopes is not allowed during the rainy season.

- Stormwater runoff should be treated before leaving site. This can include construction of a sediment trap, temporary sediment pond, silt fence, or other mechanism.

- Stabilize the soils. During the rainy season (Oct 1 to April 30) no soils are to be exposed or unworked for more than two days without being stabilized. From May 1 to September 30 no soils that are to remain exposed or unworked for more than seven days. Soils can be stabilized by plastic covering, tarps, mulching, temporary seeding, or other measures.

- Identify the drains and drainages in a work site and erect siltation fence, hay bail filters, catch basins filters, or other structures to keep soils and sediments from entering water bodies.

- All temporary erosion /sediment control features shall be inspected, maintained, and repaired as needed to assure continued performance of their intended function. They shall also be inspected within 24 hours of any storm event with greater than 0.5 inches of rain during a 24-hour period.

- All temporary erosion and sedimentation control BMPs shall be removed within 30 days after final site stabilization.

Refer to Volume 2 "Construction Stormwater Control Technical Requirements Manual" of the Stormwater Management Manual for Western Washington (August 2001) for additional information about stormwater BMPs.

1.5.4 Construction Site Safety

Worker and Public Safety

- All workers on or immediately adjacent to a construction site are required to follow all OSHA /WSHA laws and regulations. In particular, staff must be aware of policies pertaining to:

    - Confined Spaces
    - Fall Protection
    - Shoring

  - Ear Protection
  - Eye Protection

- All workers on a construction site are required to:
  - Wear hard hats if working around motorized equipment, working overhead, or using wide- swinging hand tools.
  - Wear safety reflective vests at all times
  - Wear safety glasses as specified
  - Wear ear plugs or other device if operating heavy equipment or if working near heavy equipment
  - Have valid flagging cards on them if flagging traffic. Flagging cards are required by workers directing equipment or vehicles in traffic

- If utilities are damaged at any time on the site, immediately contact your supervisor or the Project Lead, or the SPR Duty Officer (467-3005). If utility damage causes a loss of power or a leak of fuel of any kind, take steps to protect people in the immediate area from harm, call (911) then your supervisor, the Project Lead, or the SPR Duty Officer (467-3005) AND the SPR HAZ MAT crew at 423-0261.

1.5.5 Protection of Natural Resources & Infrastructure

This following best management practices should be employed to protect environment and public safety.

Prevent Spills and Pollution

- A spill prevention and control plan is mandatory for all projects.
- During fueling operations place drip pans (or equivalent) under connection points. Fuel spills will not be tolerated on construction sites.
- Store chemicals in a covered shed or preferably a building that has >110% containment of the largest container and no exposure to the elements. Close chemical containers when not in use.
- Cement truck washouts are to be collected in drums, washed into formed areas awaiting installation of concrete or asphalt, or discharged to a slurry pit. Concrete wastewater shall be disposed of in a manner that does not violate groundwater or surface water standards.
- Concrete cutting slurry shall be vacuumed into drums. Concrete wastewater shall be disposed of in a manner that does not violate groundwater or surface water standards.

- If chemicals or hazardous materials are spilled, contact SPR HAZ-MAT crew at 423-0621. Spill supplies should be readily on-hand in the event of a small spill.

Protect Vegetation and other Infrastructure

- To the extent possible, keep construction equipment operation away from all onsite vegetation, especially those within designated protection areas.
- Monitor construction with sufficient frequency to ensure that contractor is complying with all specifications and plans and that SPR assets are being protected. Use tree protection barriers, wraps, and pads when working near trees. Keep these safeguards in good repair.
- Limit site parking and material storage to approved zones and surfaces.
- Do not allow the erection of site offices or equipment and material storage in vegetation protection areas.
- Control and minimize grade changes within vegetation protection areas. Generally, no changes in grade shall occur within the drip line of any tree that will remain on site. This area may be increased at the discretion of the SUF. If the grade must be raised around a desired tree, a dry well shall be constructed around the tree at the drip line or some other designated location farther out.
- Restrict and control overhead and underground utility corridors.
- Tunneling under root zones is preferable to trenching in root areas near trees. Use of an air spade is recommended for tunneling or trenching to minimize root damage.

1.5.6 Post-construction Monitoring

All assets, including concrete features, play equipment, electrical, drainage, plumbing, and existing or new plant material need to be closely monitored by maintenance staff for at least one year after project completion. Report any improperly functioning structures, changes to plant communities, dead or dying plants, or changes in stormwater site runoff to your supervisor,

There is no warranty period for SPR In-House Projects. Report problems to your supervisor or to the SPR shop that was responsible for the project work or asset modification. District staff or Horticulture and Forestry staff as appropriate should replace dead or dying vegetation promptly.

Following a project, dramatic changes in tree health, such as an unseasonable loss of leaves, should be reported to the District Senior Gardener or the Senior Urban Forester as soon as possible.

1.5.7 Plant Establishment and Cultural Care

Maintaining existing vegetation and establishing new vegetation is a primary focus immediately following construction. The following cultural practices can preserve trees, plant material, and landscaped areas:

- Resource staff must closely monitor and inspect all new construction to ensure plant establishment for 3-5 years after construction.
- Proper irrigation management is critical to landscape survival. It may take 3-5 years for establishment of trees or other vegetation. A contractor or staff person may be responsible for irrigation management on a site, depending on the project.
- Maintain a 2-4” depth of mulch around trees and new plantings. DO NOT cover plant crowns, or have mulch come in direct contact with plant stems, or trunks.
- Monitor plant health. Watch closely for pests and diseases and treat promptly (see IPM chapter for more details).
- Special emphasis will be placed on weed control during the plant establishment period.
- Remove any tree staking after one year or as needed.

1.6 Projects Managed By Project Managers

This section addresses procedural differences that apply to projects that originate from the Planning and Development Division (PDD) at SPR. These types of projects are always funded through CIP, NMF funds, or other special grants or funds and have a designated Project Manager who oversees all aspects of the project.

To find out who is the Project Manager of a project in your park, call 733-3872, or look at the Project Management Home page in the Parks InWeb (http://inweb/parks/project_management/).

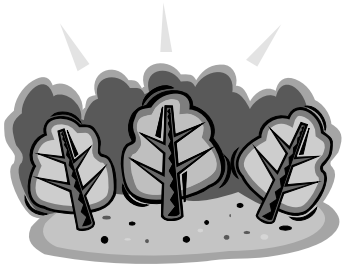
These projects often go through a public comment process. If you are interested in learning about the comments received for a specific project, please contact the appropriate Project Manager.

Attend or send comments to the Project Manager for the Project's PROView session, which occurs at the schematic and design development stages.

Discuss with Project Manager any work that may negate or change an existing products' or previous works' warranty.

Although these projects have a Project Manager, all Landscape Construction Site Management BMPs should still be followed. However, some changes may apply as follows:

1.6.1 Pre-construction Planning



The Project Manager will:

- Place Work Order for SPR In-House Locate and contact "Dial-Before-You-Dig" before earthwork begins. SPR staff is always responsible to confirm that this has been done prior to digging.
- Inventory the project site. The Project Manager should work with a District Crew Chief and SPR Senior Urban Forester to determine what kinds of tree, vegetation, and asset protections will be needed and determine replacement costs and strategies if needed.
- Request an inspection of irrigation and drainage systems within and adjacent to the project site to determine if they are operable and should be protected from damage.
- Make sure all necessary permits are in place prior to construction.

The SUF will be responsible for decisions related to trees on site before and during removal.

The District Senior Gardener, working with a SPR Landscape Architect, will be responsible for changes to, and protection of, on-site vegetation during construction.

1.6.2 Post-construction Planning

As a condition of CIP projects, all installed assets including concrete, play equipment, electrical, drainage, plumbing, new plant material as well as original vegetation, are covered by a warranty for specified length of time.

SPR staff will monitor CIP projects to verify that these assets are installed properly, function properly, meet project specifications, or for other reasons do not perform as guaranteed. If SPR staff determines that there is such a deficiency, then they should report it to their supervisor. The supervisor will then determine if it should be reported to the SPR Project Manager. The SPR Project Manager ensures contractor compliance with plant establishment and that contractor installed hard assets function properly throughout the warranty.

There is no warranty for CIP project or NMF project work performed by SPR In-House Staff. However, SPR staff should still monitor this work and report any deficiency to their supervisor. The supervisor will take steps to remedy the deficiency, as follows:

- Report utility and irrigation concerns or damage, and damage to built structures to the appropriate SPR shop and the Project Manager.
- Dead or dying vegetation should be replaced in a timely manner by District staff or City Wide Horticulture staff as appropriate.

1.7 Training

Construction Site Management Overview

Construction in Environmentally Critical Areas

Seattle's Storm Water Control Codes and Storm Water Management

SPR Tree Policy, SPR Specifications and Standards, and other applicable laws and regulations.

1.8 Appendices List – Construction Site Management in Landscapes

HARD COPY REFERENCES

1. "Guidelines for Landscape Work affecting Utilities". This guideline explains the step-by-step procedures for organizing a construction project or maintenance regime to avoid potential damage to utilities.

ONLINE REFERENCES

1. Seattle Department of Parks and Recreation Tree Management, Maintenance, Pruning And/Or Removal Policy, Number 060-P 5.6.1, June 1, 2001

http://parksweb/refs/policy/index.htm

2. SPR Standards and Specifications: All mandated SPR construction standards that apply to landscape projects. http://www.cityofseattle.net/parks/projects/standards/specs.asp

3. Washington State Department of Ecology, Stormwater Management Manual for Western Washington, August 2001

www.ecy.wa.gov/programs/wq/stormwater/manual.html

Appendix 1

Construction Site Management in Landscapes

Guidelines for Landscape Work Affecting Utilities

Guidelines for Landscape Work affecting Utilities

Every time you are going to aerify turf, dig plant or remove trees and shrubs, add mulch, add soil, remove soil or sod, consider the impacts to utilities, both underground and aboveground. These utilities need to be located prior to beginning work.

Utilities may be located in out-of-the-way places or underground. Locations and especially the exact depth underground may not match plans or blueprints. Failure to accurately locate these utilities can delay your project, can cause significant damage to park landscapes or structures and can also result in serious injury or even death. Follow these guidelines, as applicable to your project or maintenance work, to make your work successful.

Remember that it is your project, job or maintenance task until completion! Be sure to follow through with all tasks and assist Shops whenever possible.

PLAN AHEAD.

- Identify a **Project Lead person** for this project or work.
- **DO NOT assume that there are no utilities in your site**. Look at an irrigation plan or other site blueprints or plans to determine possible utilities. Locate the exact areas where you are doing this work.
- If you have made a reasonable attempt to locate something on the plan and you just can't find it let the Plumbing Shop know.
- **Consider any reason you may need to adjust your schedule of work or move the work location.** For example, if the place you want to plant a tree is directly over an irrigation line, it is easier to adjust your location than to accidentally damage irrigation. Consider seasonal scheduling of your work or project so as not to impact special events or recreation programs like baseball. A work order needs to be requested for all in-house utility locates, moving plants, trenching or other additional work by the Shops or Horticulture crews.

AT LEAST TWO WEEKS PRIOR TO THE WORK STARTING DO THE FOLLOWING TASKS AT YOUR WORK SITE:

1. **Make a drawing** of the work that you are planning; indicate NORTH with an arrow.
2. **Call the Work Order Jobline and request an in-house locate** for the Electric Shop, the Plumbing Shop and the Sewer Crew. Fax a drawing of the work site with irrigation details to the Jobline: #684-7271
3. **You will need to call DIAL TO DIG—1-800-424-5555.** (The Parks contract ID# is 34267.) If you are not sure call one of the Shops. (Many Parks were streets at one time and many Parks have utilities running thru them.)
4. **Mark landscapes** with special **inverted solvent-based marking paint** from the Warehouse.
5. **Mark every location** at the site where the work is to be done.

AT LEAST TWO WEEKS PRIOR TO THE WORK STARTING DO THE FOLLOWING TASKS, continued:

6. **Mark** all irrigation heads, hose bibs, quick couplers, valves and valve boxes that you see on the plan that are within 15 feet of the work that you are planning.
7. **Mark the sprinkler heads** with a circle around them keeping the paint 4" away from the sprinkler.
8. **Uncover and make obvious** any valve boxes that you locate.
9. **Do not dig within two feet of any marked utilities**—if you are not sure what the marks are indicating, contact the Shops.
10. **If you determine** that there are irrigation heads, valves and/or valve boxes that need to be raised because of your work call in a separate work order and contact the Plumbing Shop to make arrangements to assist with digging, barricades or otherwise to complete your job.

1 TO 2 DAYS PRIOR TO THE LANDSCAPE WORK BEGINS, DO THE FOLLOWING TASKS:

- **Hand dig excavation areas** and assist Shops whenever possible.
- **Re-mark landscapes** with special **inverted solvent-based marking paint** from the Warehouse; DO NOT use regular spray paint as it clogs sprinkler heads and other equipment.
- **Re-mark the work area** at the site where the work is to be done.
- **Re-mark all irrigation** heads, hose bibs, quick couplers, valves and valve boxes that you see on the plan that are within 15 feet of the work that you are planning.
- **Re-mark the sprinkler heads with a circle** around them keeping the paint 4" away from the sprinkler head.
- **Uncover and make obvious** any valve boxes that you locate.